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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,727	10/10/2006	Yee Min Lim	03989.0011.PCUS00	4968

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EXAMINER	
HARP, WILLIAM RAY	

ART UNIT	PAPER NUMBER
4174	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,727	LIM ET AL.	
	Examiner	Art Unit	
	William R. Harp	4174	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/11/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) was submitted on May 11, 2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

2. Claim **2** is objected to because of the following informalities:

a. Regarding Claim 2, the recitation of "one of the plurality of the plurality" should read --one of the plurality--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims **1, 2, and 7-10** are rejected under 35 U.S.C. 102(b) as being anticipated by Van den Goor (USPN 5667054).

5. Regarding Claims 1 and 2, Van den Goor teaches a conveyor system comprising: a first pin (5' in Figure 9); a first link block (links 2 and 3 in Figure 4 are considered to form a single link block, of which the facing ends of two link blocks are shown in Figure 9) carrying the first pin; a first offset bushing (formed by sleeves 50 and 51 in Figure 9) on the first pin; and a second link block (Figure 1 shows a plurality of link blocks formed by individual links 2 and 3) carrying the first offset bushing, the second link block movable with respect to the first link block upon

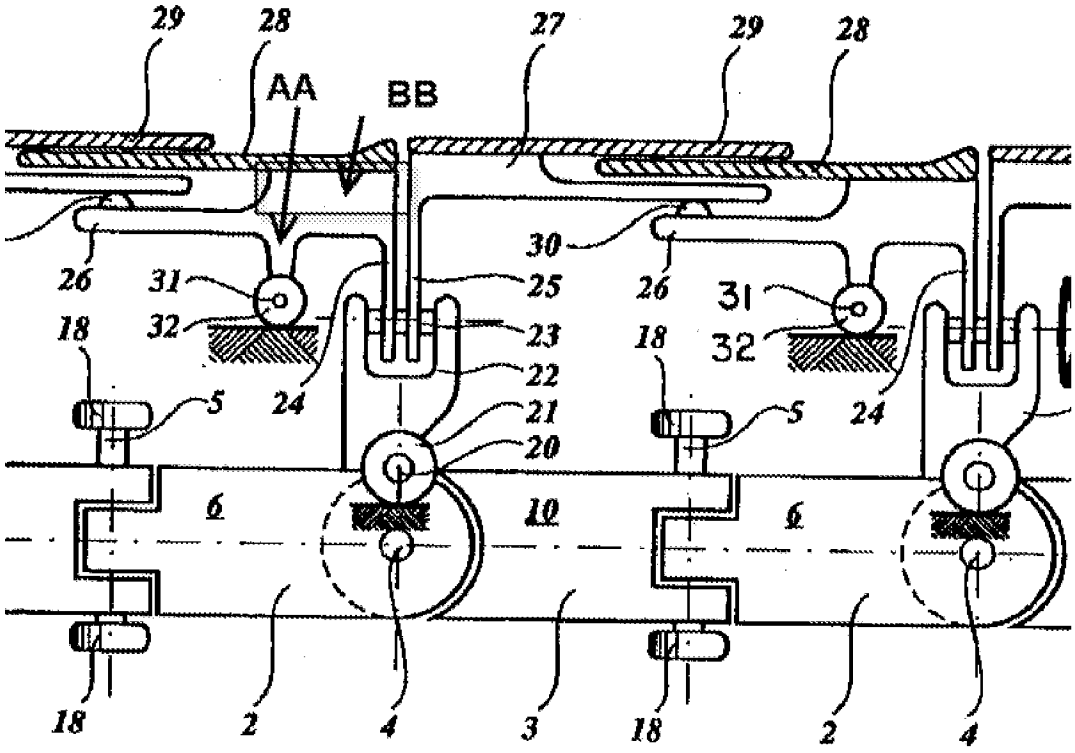
rotation of the first offset bushing with respect to the second link block. Van den Goor teaches that this arrangement is used for tensioning the transport chain [C7, L42-45]. Van den Goor further teaches that the sleeves can be rotated 180 degrees about the central axis of the pin, which as a result, will bring the ends of links 2 and 3 that are interconnected by the pin towards one another [C7, L50-53]. Therefore, the sleeves are rotated with respect to the second link, which causes the second link to be moved with respect to the first link. Van den Goor further teaches a plurality of pins, bushings, and link blocks, as described in [C7, L59-61], discussing a multiple pins, links, and sleeves. Further, Figure 1 illustrates a plurality of link blocks and pins; therefore it would be implicit that there would be a plurality of offset bushings. The conveyor is therefore is able to be guided in both a vertical and horizontal direction, which would meet the limitation of a two- or three-dimensional curve chain assembly, and combination thereof [C2, L42-45].

6. Regarding Claim 7, Van den Goor teaches the limitations above, and further teaches a guide wheel (18 in Figure 2) on the pin and a raceway (19 in Figure 2) for guiding the guide wheel in movement of at least two dimensional, three dimensional, and a combination of two and three dimensional directions. The conveyor is seen in Figure 7 to run in the X, Y, and Z directions, therefore it would be implicit that the raceway would guide the guide wheel throughout all of the directional movements.

7. Regarding Claim 8, Van den Goor teaches the limitations above and further teaches a slat (28 in Figure 1) and connectors (22 in Figure 1) for connecting the slat to the first link block in a fixed position thereto. Connectors (22) are secured to link 2 [C4, L17-18].

8. Regarding Claim 9, Van den Goor teaches the limitations above and further teaches a slat support member (AA shown below) having a wheel (32 in Figure 1) provided thereon;

connectors (BB shown below) for connecting the slat to the slat support member and to the first link block; and a raceway (33) for guiding the wheel in movement of at least two dimensional, three dimensional, and a combination of two and three dimensional directions.



9. Regarding Claim 10, Van den Goor teaches the limitations above and further teaches that the pin is at an angle to the slat (as illustrated in Figure 2).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claim **3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Goor as applied to claim 1 above, and in view of Tuomikoski (USPN 6241080).

13. Regarding Claim 3, Van den Goor teaches the limitations above, however, fails to teach that the bushing or the pin have conical surfaces.

14. Tuomikoski teaches a joint pin (x in Figure 3) that has a conical surface. The purpose of the conical surface is to optimize the surface pressures and eliminate undesired bending in the chain [C2, L40-43]. The corresponding surfaces of the chain links (1) are also conically shaped.

15. Therefore it would have been obvious to one of ordinary skill at the time of the invention to provide conical surfaces on the bushing and the pin in order to optimize surface pressures and eliminate undesired bending in the chain as taught by Tuomikoski.

16. Claims **4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van den Goor as applied to claim 1 above, and in view of Frost (US Pub 2003/0168323 A1).

17. Regarding Claims 4-6, Van den Goor teaches the limitations above, yet fails to teach a spherical ball bushing on the first pin and that the offset bushing has a spherical opening, as well bushings for supporting the pin.

18. Frost teaches a conveyor chain (10 in Figure 1) with links (12a,b and 14 in Figure 1). A pin (16 in Figure 1) is used to connect the links as illustrated in Figure 1. The pin has a spherical ball member (20 in Figures 1-3) that allows pivotal movement of the center link (14) provides greater flexibility to the chain to negotiate sharper vertical curves [P4, Para. 73]. The center link has a corresponding spherical surface (14b in Figure 3) for engaging the ball member [P4, Para. 72]. Frost teaches [P4, Para. 73] that the ball member and surface distribute the loads over a constant surface area, reducing stress concentrations, decreasing the wear on the chain and increasing the life of the chain. Frost further teaches that a problem encountered in chain links is increased wear due to a lack of lubrication [P1, Para. 3] and teaches that the sleeve portion [P1, Para. 10] may comprise a low coefficient of friction coating.

19. One of ordinary skill would recognize that a coating with a low coefficient of friction would preclude the need for lubrication. It would have been obvious to one of ordinary skill to include a spherical ball bushing and corresponding spherical opening in the offset bushing to decrease the wear on the chain and to negotiate tighter vertical curves. The ball bushing would allow for multi-directional movement as expected. One of ordinary skill would recognize from Van den Goor that the pin is supported by the bushing through both blocks. One of ordinary skill could also have duplicated the bushings, since duplicating the components of a prior art device is a design consideration within the skill of the art. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). Providing duplicate bushings to support the pin would not affect the performance of the device nor produce any unexpected results; therefore, it would have been obvious to duplicate the bushings to support the pin.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 3554360 to Bildsoe is directed to a pallet conveyor that is adapted to travel horizontal or vertical paths. USPN 4493680 to Hoffman is directed to a wear compensating link pin that changes the pitch of the chain links when rotated. USPN 4864945 to Hasegawa is directed to a compression ratio-changing device including a rotary eccentric member that changes the volume inside a chamber when the member is rotated. USPN 5407061 to Okada et al. is directed to a slat conveyor with a pin that is used to change the pitch of the conveyor links. USPN 5826704 to Van den Goor is a divisional of the Van den Goor patent referenced previously in this Office Action. US Publication 2004/0245076 to Grabmann is directed to a slat conveyor. US Publication 2006/0039749 to Gawehn is directed to an eccentric conical fastening system. USPN 6991094 to Frost is the patent issuing from the Frost publication used previously in this Office Action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William R. Harp whose telephone number is (571) 270-5386. The examiner can normally be reached on Monday - Thursday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly D. Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/W. R. H./
Examiner, Art Unit 4174

/JACOB CHOI/
Primary Examiner, Art Unit 2885